

CLAIMS

What is claimed is:

- 1 1. A method comprising the computer-implemented steps of:
 - 2 while an XML processor performs a validation operation on an XML-based input
 - 3 stream,
 - 4 causing said XML processor to generate one or more messages that identify
 - 5 annotations associated with elements in said XML-based input stream.
- 1 2. The method of Claim 1, further comprising the computer-implemented step of:
 - 2 while said XML processor performs said validation operation on said XML-based
 - 3 input stream,
 - 4 receiving requests for said annotations;
 - 5 wherein the step of causing said XML processor to generate one or more
 - 6 messages is performed in response to said requests.
- 1 3. The method of Claim 2, wherein the step of receiving requests includes receiving a
- 2 request via an application program interface through which information about said
- 3 validation operation can be requested by an external application.
- 1 4. The method of Claim 1, wherein the step of causing said XML processor to generate
- 2 one or more messages that identify annotations includes causing said XML processor
- 3 to generate one or more messages that are transmitted in an output stream.
- 1 5. The method of Claim 1, wherein the step of causing said XML processor to generate
- 2 one or more messages that identify annotations includes causing said XML processor

3 to generate one or more messages before completion of said validation operation on
4 said XML-based input stream.

1 6. The method of Claim 1,
2 wherein said validation operation includes performing a validation operation on a first
3 element of said XML-based input stream; and
4 wherein the step of causing said XML processor to generate one or more messages
5 includes causing said XML processor to generate one or more messages that
6 identify an annotation associated with said first element, only if said first
7 element is determined valid based on said validation operation on said first
8 element.

1 7. A computer-readable medium carrying one or more sequences of instructions which,
2 when executed by one or more processors, causes the one or more processors to
3 perform the method recited in Claim 1.

1 8. A computer-readable medium carrying one or more sequences of instructions which,
2 when executed by one or more processors, causes the one or more processors to
3 perform the method recited in Claim 2.

1 9. A computer-readable medium carrying one or more sequences of instructions which,
2 when executed by one or more processors, causes the one or more processors to
3 perform the method recited in Claim 3.

- 1 10. A computer-readable medium carrying one or more sequences of instructions which,
2 when executed by one or more processors, causes the one or more processors to
3 perform the method recited in Claim 4.

- 1 11. A computer-readable medium carrying one or more sequences of instructions which,
2 when executed by one or more processors, causes the one or more processors to
3 perform the method recited in Claim 5.

- 1 12. A computer-readable medium carrying one or more sequences of instructions which,
2 when executed by one or more processors, causes the one or more processors to
3 perform the method recited in Claim 6.

- 1 13. A method comprising the computer-implemented steps of:
2 while performing a validation operation on an XML-based input stream,
3 receiving a request for information about the state of said validation operation;
4 and
5 responding to said request by providing said information about said state of
6 said validation operation.

- 1 14. The method of Claim 13, wherein the step of receiving a request includes receiving a
2 request regarding whether a first element of said XML-based input stream is defined
3 in corresponding information that dictates the structure of XML data.

- 1 15. The method of Claim 13, wherein the step of receiving a request includes receiving a
2 request regarding what data type definition is associated with a first element of said

3 XML-based input stream, wherein said data type is defined in information that
4 dictates the structure of corresponding XML data.

1 16. The method of Claim 15, wherein the step of receiving a request includes receiving a
2 request regarding what data type definition is associated with an attribute of said first
3 element, wherein said data type that is associated with said attribute is defined in said
4 information that dictates the structure of corresponding XML data.

1 17. The method of Claim 13, wherein the step of receiving a request includes receiving a
2 request regarding whether a data type of content of a first element of said XML-based
3 input stream conforms to a corresponding data type definition in information that
4 dictates the structure of corresponding XML data.

1 18. The method of Claim 13, wherein the step of receiving a request includes receiving a
2 request regarding a first annotation that is associated with a first element of said
3 XML-based input stream, wherein said first annotation is defined in information that
4 dictates the structure of corresponding XML data.

1 19. The method of Claim 18, wherein said information that dictates the structure of
2 corresponding XML data comprises a second annotation definition that is associated
3 with a second element of said XML-based input stream, and wherein the step of
4 receiving a request includes receiving a request regarding said second annotation, the
5 method further comprising the computer-implemented step of:
6 before responding to said request regarding said second annotation, responding to a
7 request regarding whether said first element is defined in said information that
8 dictates the structure of corresponding XML data.

- 1 20. The method of Claim 13, wherein the step of receiving a request includes receiving a
- 2 request regarding a status of said validation operation with respect to a first element
- 3 of said XML-based input stream.

- 1 21. The method of Claim 13, wherein the step of receiving a request includes receiving a
- 2 request via an application program interface through which information about said
- 3 validation operation can be requested by an external application.

- 1 22. The method of Claim 13, wherein the step of receiving a request includes receiving a
- 2 request from an event handler sent in response to an event received in a parser output
- 3 stream.

- 1 23. The method of Claim 13, wherein the step of responding to said request includes
- 2 providing, in an output stream, said information about the state of said validation
- 3 operation.

- 1 24. The method of Claim 13, further comprising the computer-implemented step of:
- 2 parsing said XML-based input stream only once for both of said validation operation
- 3 and operations that are dictated by annotations associated with elements in
- 4 said XML-based input stream.

- 1 25. The method of Claim 13, wherein information that dictates the structure of
- 2 corresponding XML data in said XML-based input stream, with which said input
- 3 stream is validated in said validation operation, comprises a plurality of schema
- 4 definitions that are associated with a plurality of corresponding XML documents that
- 5 could be constituent to said XML-based input stream.

- 1 26. A computer-readable medium carrying one or more sequences of instructions which,
2 when executed by one or more processors, causes the one or more processors to
3 perform the method recited in Claim 13.

- 1 27. A computer-readable medium carrying one or more sequences of instructions which,
2 when executed by one or more processors, causes the one or more processors to
3 perform the method recited in Claim 14.

- 1 28. A computer-readable medium carrying one or more sequences of instructions which,
2 when executed by one or more processors, causes the one or more processors to
3 perform the method recited in Claim 15.

- 1 29. A computer-readable medium carrying one or more sequences of instructions which,
2 when executed by one or more processors, causes the one or more processors to
3 perform the method recited in Claim 16.

- 1 30. A computer-readable medium carrying one or more sequences of instructions which,
2 when executed by one or more processors, causes the one or more processors to
3 perform the method recited in Claim 17.

- 1 31. A computer-readable medium carrying one or more sequences of instructions which,
2 when executed by one or more processors, causes the one or more processors to
3 perform the method recited in Claim 18.

- 1 32. A computer-readable medium carrying one or more sequences of instructions which,
2 when executed by one or more processors, causes the one or more processors to
3 perform the method recited in Claim 19.

- 1 33. A computer-readable medium carrying one or more sequences of instructions which,
2 when executed by one or more processors, causes the one or more processors to
3 perform the method recited in Claim 20.

- 1 34. A computer-readable medium carrying one or more sequences of instructions which,
2 when executed by one or more processors, causes the one or more processors to
3 perform the method recited in Claim 21.

- 1 35. A computer-readable medium carrying one or more sequences of instructions which,
2 when executed by one or more processors, causes the one or more processors to
3 perform the method recited in Claim 22.

- 1 36. A computer-readable medium carrying one or more sequences of instructions which,
2 when executed by one or more processors, causes the one or more processors to
3 perform the method recited in Claim 23.

- 1 37. A computer-readable medium carrying one or more sequences of instructions which,
2 when executed by one or more processors, causes the one or more processors to
3 perform the method recited in Claim 24.

- 1 38. A computer-readable medium carrying one or more sequences of instructions which,
2 when executed by one or more processors, causes the one or more processors to
3 perform the method recited in Claim 25.

1 39. A system comprising:
2 a validator that validates elements and attributes in an XML-based input stream
3 against information that dictates the structure of corresponding elements and
4 attributes, said validator comprising
5 a state machine that responds to requests for information about validating a
6 first element in said XML-based input stream, while validating said
7 first element.

1 40. The system of Claim 39, wherein said state machine is able to respond to a request for
2 information about an annotation associated with said first element, while validating
3 elements or attributes in said XML-based input stream.

1 41. The system of Claim 39, wherein said state machine is able to respond to a request
2 that is responsive to an event in a parsed output stream that is based on said XML-
3 based input stream.